

Supplementary Information

Polysaccharide-based films for the prevention of unwanted postoperative adhesions at biological interfaces

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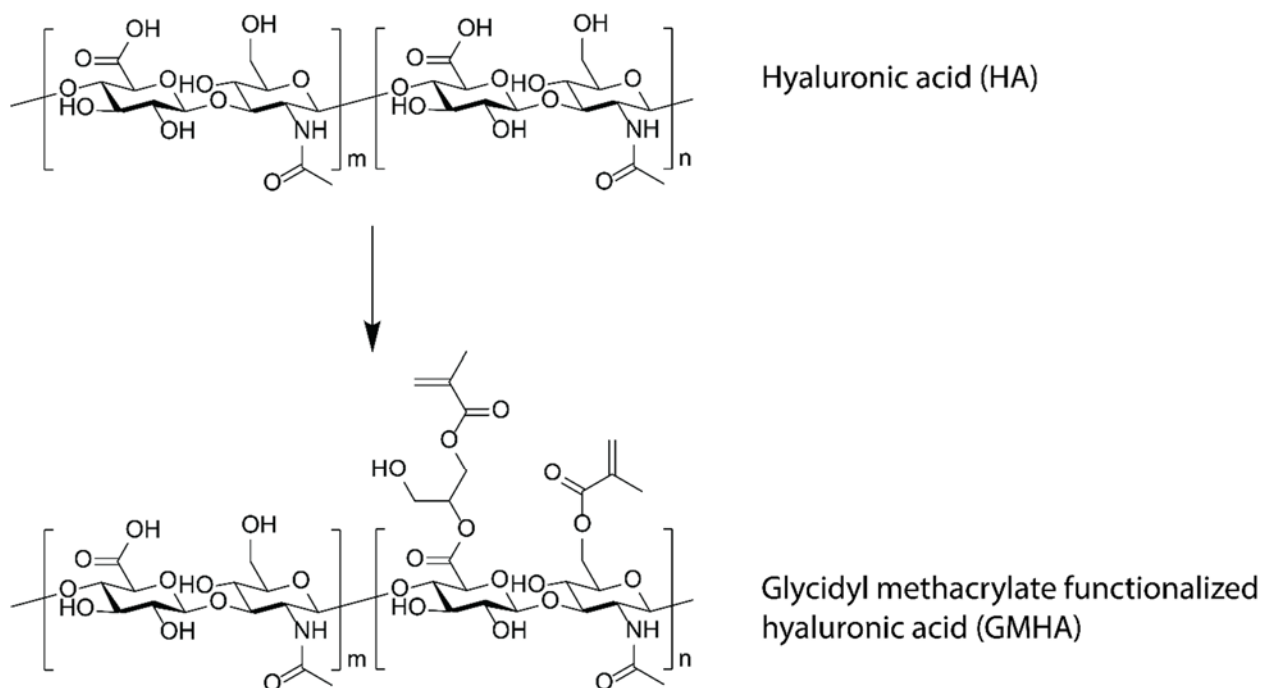


Figure S1. Conversion of hyaluronic acid to glycidyl methacrylate functionalized hyaluronic acid.

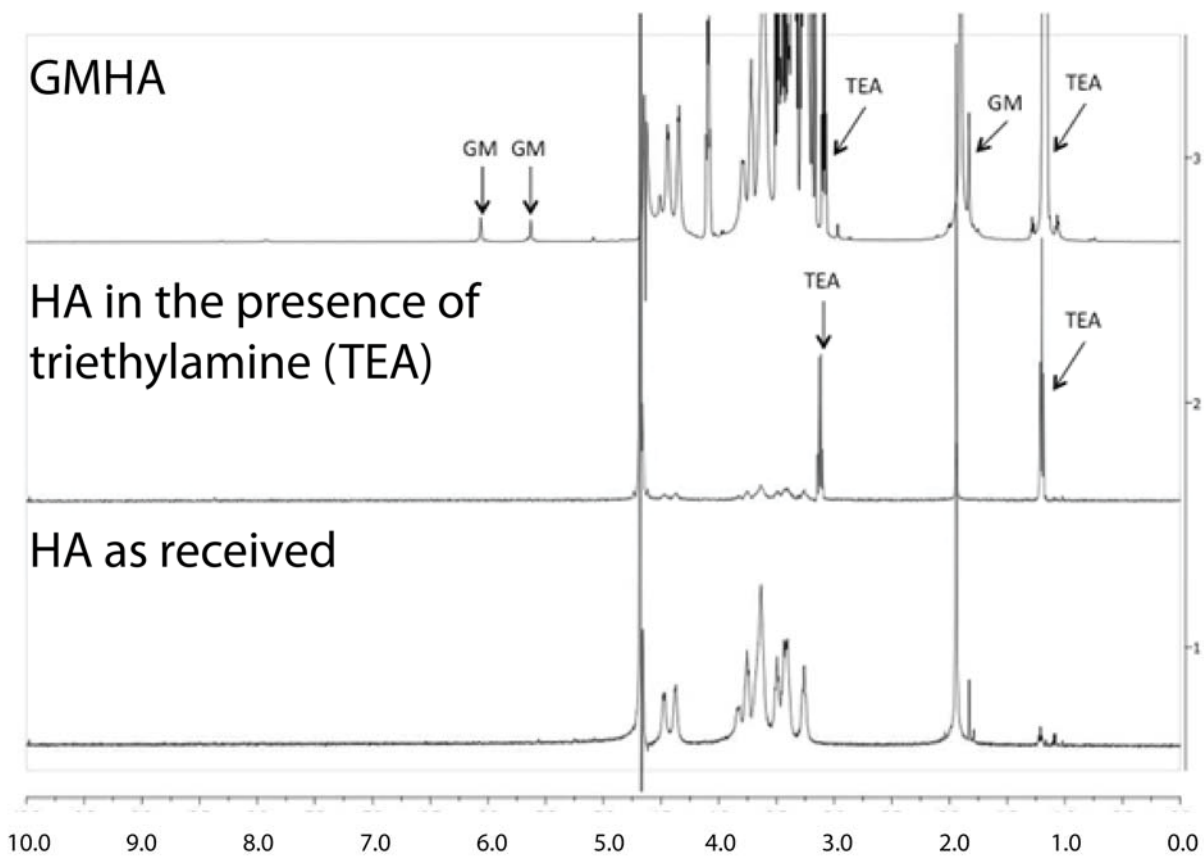


Figure S2. NMR spectra of hyaluronic acid alone, in the presence of trimethylamine and modified with glycidyl methacrylate.

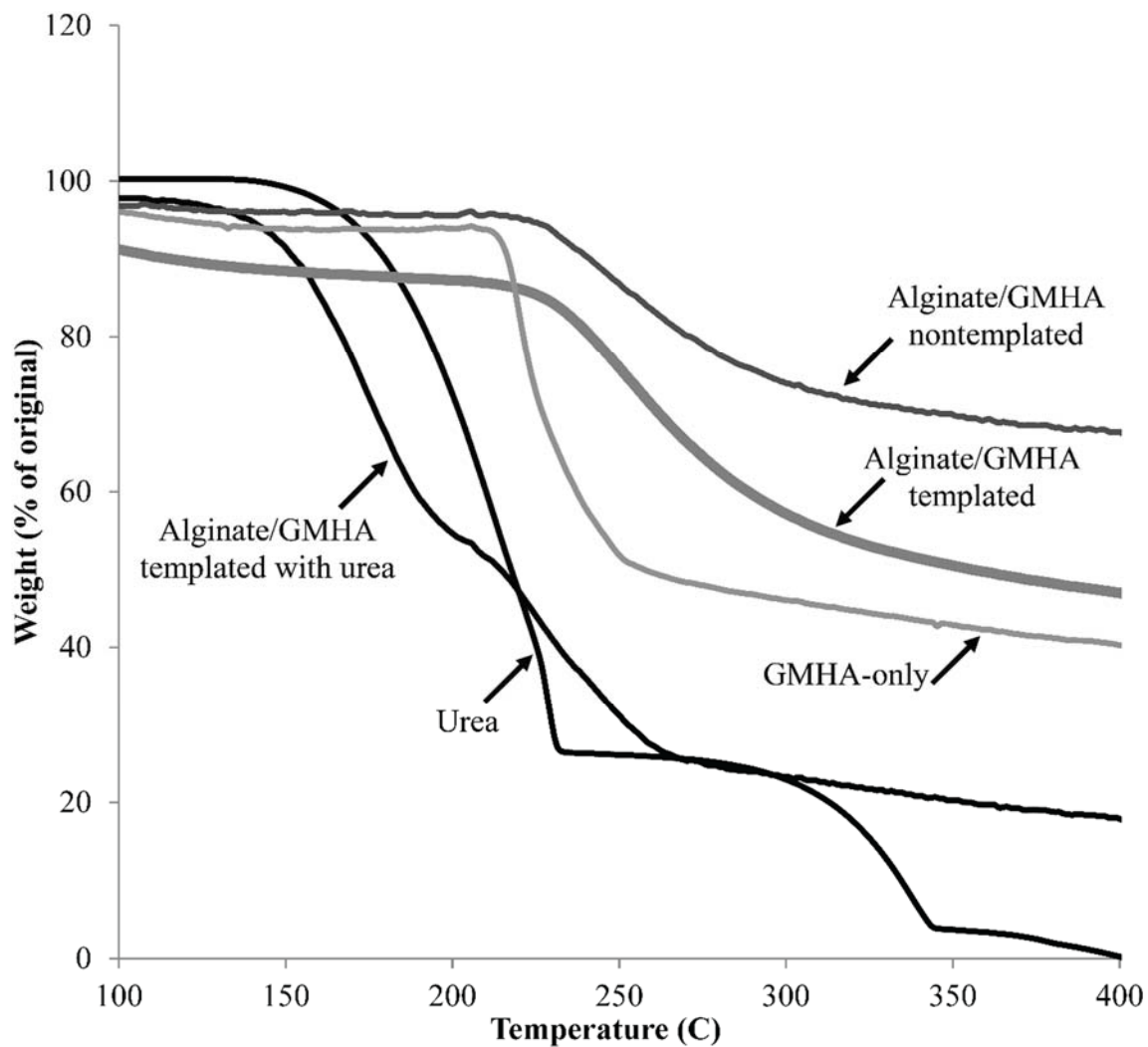


Figure S3. Thermogravimetric analysis (TGA) to confirm the complete removal of urea from the alginate/GMHA films after extensive washing.

$$\text{Modulus (MPa)} = \frac{\text{Tensile strength } \left(\frac{N}{\text{mm}^2}\right)}{\text{Elongation at break}} \quad [1]$$

$$E (\%) = 100\% * \frac{(L - L_0)}{L_0} \quad [2]$$

$$TS \left(\frac{N}{\text{mm}^2}\right) = \frac{F}{A} \quad [3]$$

$$T = \int_0^{\epsilon_B} \sigma(d\epsilon) \quad [4]$$

Figure S4: Equations related to the mechanical properties of the films.

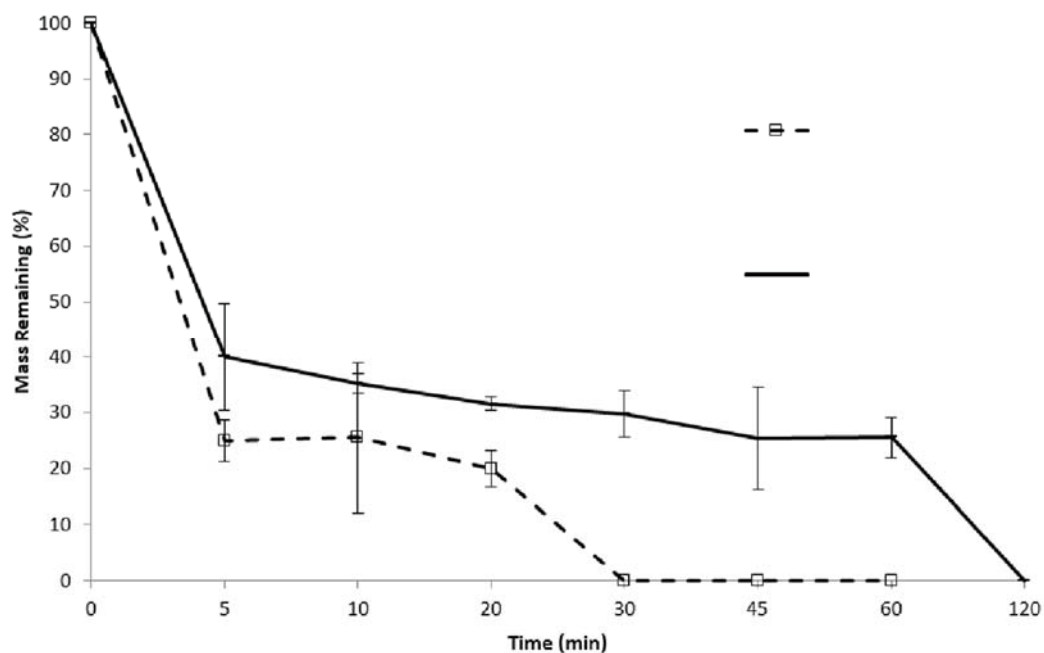


Figure S5: Dissolution of templated films compared to nontemplated films. Templated films degraded slower than nontemplated films. Nontemplated films went through complete dissolution with 30 min of exposure to 0.1 M citrate. An additional 90 min of exposure to 0.1 M citrate caused complete dissolution of the templated films. (N = 6).

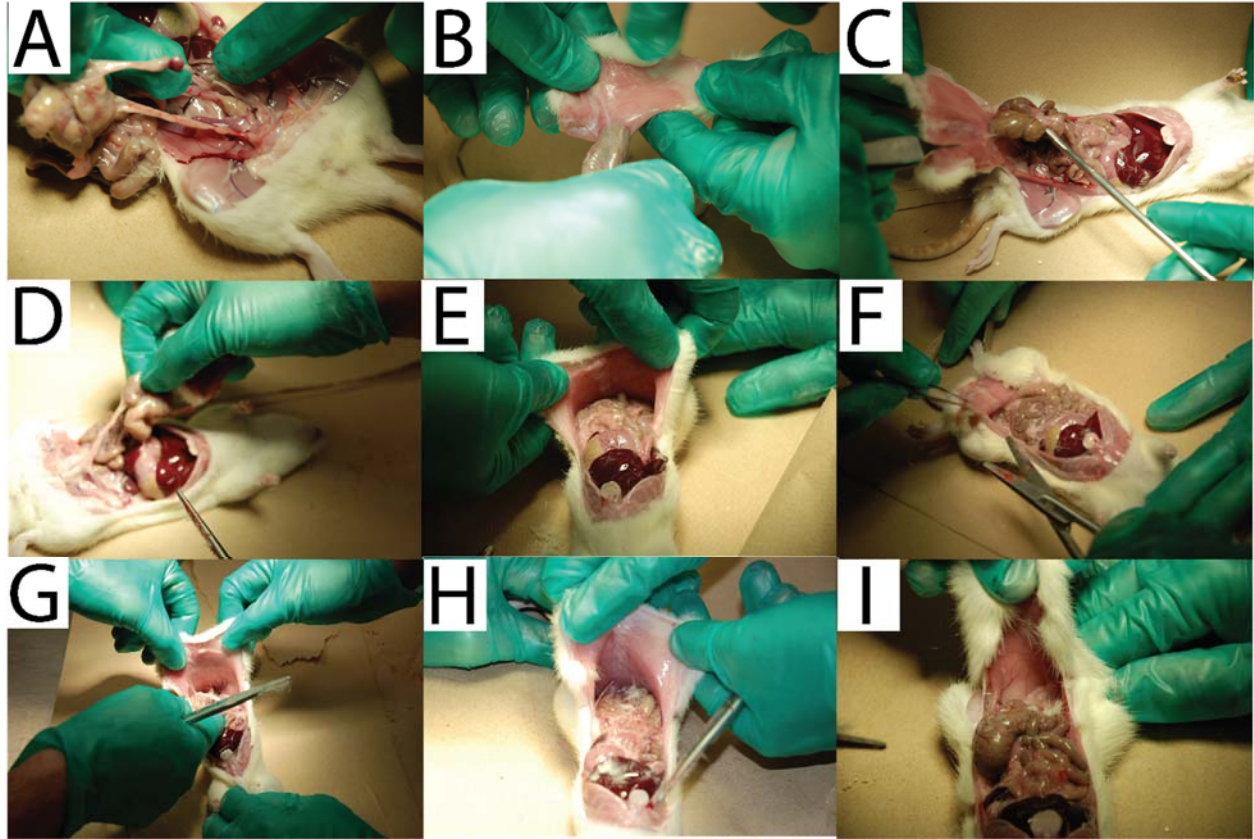


Figure S6: Examples of photographs of animals after surgery. *Control surgeries:* A) Rat 4529 – Grade 3. B) Rat 3557 – Grade 3. C) Rat 1525 – Grade 3. *Animals after implantation of Seprafilm®:* D) Rat 2455 – Grade 3. E) Rat 7443 – Grade 0. F) Rat 8451 – Grade 0. *Animals after implantation of alginate/GMHA films with sacrificial urea crystal template pores:* G) Rat 6715 – Grade 2. H) Rat 5717 – Grade 0. I) Rat 3734 – Grade 0.

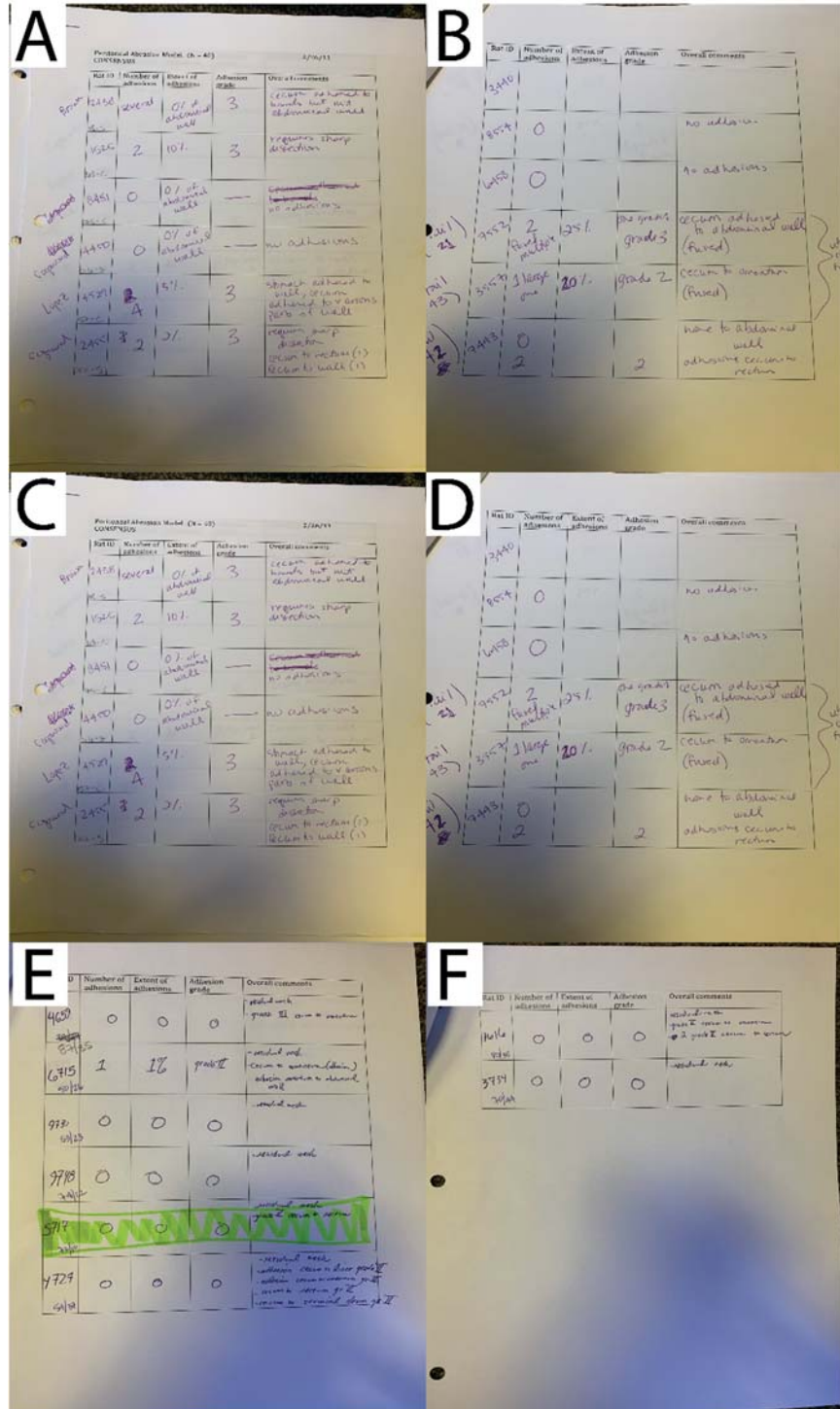
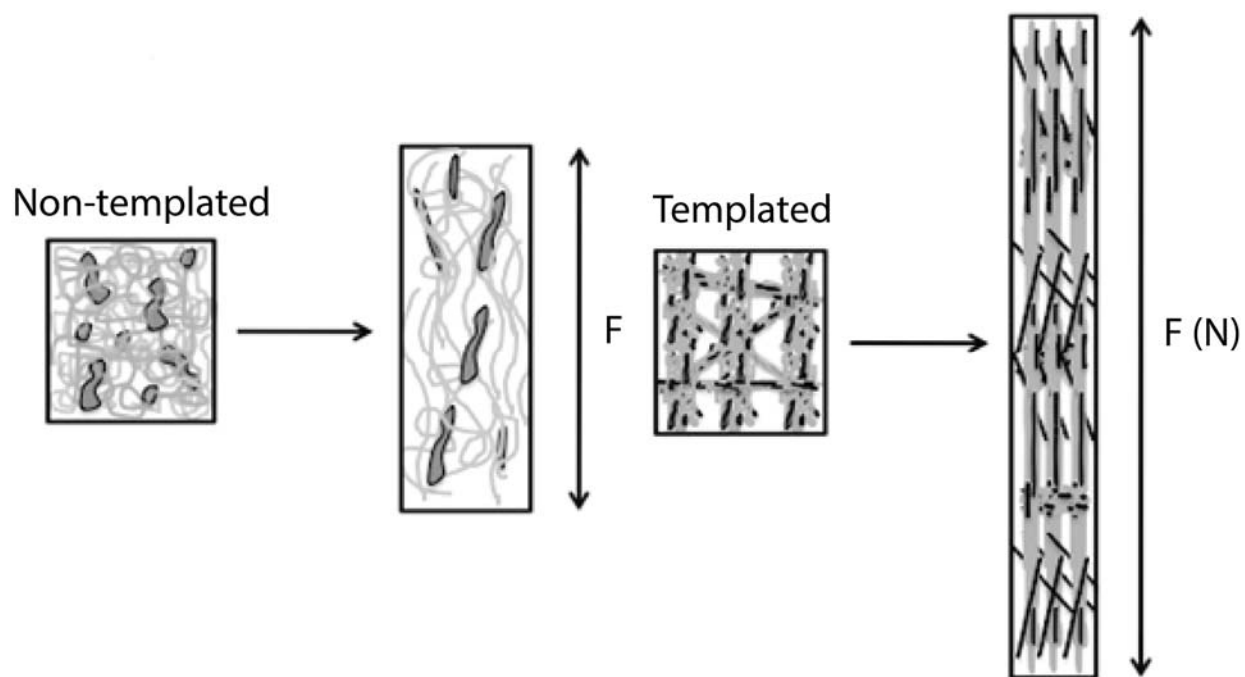


Figure S7: Examples of surgeon consensus sheets for animals after surgery. A&B) Control surgeries. C&D) Animals after implantation of Seprafilm®. E&F) Animals after implantation of alginate/GMHA films with sacrificial urea crystal template pores.



Scheme S1: Schematic illustrating the deformation of the films under tension.